

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the Application. Deletions are ~~striketrough~~ and additions are underlined.

1. (Original) An inactive  $\text{Ca}^{2+}$ /calmodulin-dependent protein kinase II $\alpha$  (CaMKII $\alpha$ ) knockin nonhuman animal, wherein a CaMKII $\alpha$  gene of one or both of homologous chromosomes is substituted into an inactive type so that an inactive CaMKII $\alpha$  is expressed, and thereby a protein kinase activity of the CaMKII $\alpha$  is specifically impaired while a calmodulin binding capacity of the CaMKII $\alpha$  and a capacity of multimerizing subunits are maintained.

2. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 1, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal's brain's nucleus accumbens has lower neuronal activity as compared to that of a wild-type, while there is no substantial difference in neuronal activities in the cerebral cortex and corpus striatum as compared to those of ~~a~~ the wild-type.

3. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 2, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is produced by a gene targeting method.

4. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 3, wherein one or a plurality of amino acid residues in a catalytic domain of the CaMKII $\alpha$  has been modified.

5. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 4, wherein one or a plurality of amino acid residues that is required for binding to ATP has been modified.

6. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 5, wherein a lysine residue that is required for binding to ATP has been modified.

7. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to any one of claims 2 to 6,~~ wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

8. (Currently amended) The inactive CaMKII $\alpha$  knockin nonhuman animal ~~according to~~ of claim 7, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.

9. (Original) An inactive Ca<sup>2+</sup>/calmodulin-dependent protein kinase II $\alpha$  (CaMKII $\alpha$ ) knockin cell, wherein a CaMKII $\alpha$  gene of one or both of homologous chromosomes is substituted into an inactive type so that an inactive CaMKII $\alpha$  is expressed, and thereby a protein kinase activity of the CaMKII $\alpha$  is specifically impaired while a calmodulin-binding capacity of the CaMKII $\alpha$  and a capacity of multimerizing subunits are maintained.

10. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 3, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

11. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 10, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.

12. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 4, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

13. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 12, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.

14. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 5, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

15. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 14, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.

16. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 6, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a rodent animal.

17. (New) The inactive CaMKII $\alpha$  knockin nonhuman animal of claim 16, wherein the inactive CaMKII $\alpha$  knockin nonhuman animal is a mouse.